ORDER NO. SD7810-1457

Service Manual

Turntable System

SL-5200 (ES), (XFE) / SL-5210 (FEE)

- The model SL-5200 (ES) is available in European Military only.
- The model SL-5200 (XFE) is available in East PX only.
- The model SL-5210 (FEE) is available in European Audio Club only.

- **SL-5200 is of silver finish.**
- **SL-5210 is of black finish.**

For additional information, please refer to the service manual for Model No. SL-5200/5210 (ORDER NO. SD7810-1458).

Notes: * This service manual includes only the changes of the **SL-5200/5210** service manual **(ORDER NO. SD7810-1458)**
* When servicing models **SL-5200 (ES, XFE)/SL-5210 (FEE),** this service manual and **SL-5200/5210 (ORDER NO. SD7810-1458)** service manual should be used together.

MODIFICATIONS-1

■ SPECIFICATIONS (Page 1)

Cartridge section (for set with cartridge)

Type:	Moving magnetic
Frequency response:	20 to 25,000 Hz
Output voltage:	3.5 mV 1 kHz, 5 cm/sec. zero to peak lateral velocity (10 mV 1 kHz, 10 cm/sec. zero to peak 45° velocity)
Channel separation:	25 dB at 1 kHz
Channel balance:	Within 2 dB at 1 kHz
Compliance (dynamic):	12 x 10^{-6} cm/dyne at 100 Hz
Load impedance:	47 kΩ to 100kΩ
Stylus pressure:	1.25 ± 0.25 g
Weight:	6.0 (cartridge only)
Replacement stylus:	EPS-206ED

⬇

Cartridge section

Type:	Moving magnetic stereo cartridge
Frequency response:	20 to 25,000 Hz
Output voltage:	2.5 mV 1 kHz, 5 cm/sec. zero to peak lateral velocity (3.5 mv 1 kHz, 5 cm/sec. zero to peak 45° velocity)
Channel separation:	22 dB at 1 kHz
Channel balance:	Within 2 dB at 1 kHz
Load impedance:	47kΩ to 100 kΩ
Stylus pressure:	1.75 ± 0.25 kg
Replacement stylus:	EPS-74STED (ATN71E)

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
17-15, 6-chome, Shinbashi, Minato-ku, Tokyo 105 Japan

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MODIFICATIONS-2

REPLACEMENT PARTS LIST (Page 23)

- SL-5200 (ES) → [ES]
- SL-5200 (XFE) → [XFE]
- SL-5210 (FEE) → [FEE]

Ref. No.	Change of Part No.		Part Name & Description	Per Ser		Remarks
	SD7810-1458	SL-5200 (ES), (XFE) SL-5210 (FEE)				
			SWITCHES			
S901	SFDSAH764039	SFDSAH764039	Switch, Power	1		
	V-1A445					
			CAPACITORS			
C901	ECQE2A103MZ	ECQE2A103MZ	Polyester, 0.01μF, 250V, ±20%	1		
	ECKDHS103SE2					
			CABINET and CHASSIS PARTS			
4	SFKK520-31	SFKK520-31 [ES], [XFE]	Panel, Front	1		○
	SFKK521P31	SFKK521P31 [FEE]	Panel, Front	1		○
15	SFUM190-11	SFUM190-12	Bushing, AC Cord	1		
	SFUM190-12					
16	QFC1208M	SJA83	AC Cord	1		
	RJA45ZC-K					
	RJA23ZC-K					
19	SFCZ8801	SFPEV7803	Screw, Cartridge	2		
20	SFPEW9601	SFPEW9601	Washer, Cartridge	2		
21	EPC206CK	EPC74SMED	Cartridge	1		
22	SFPEN3302	SFPEN3302	Nut, Cartridge	2		
28	SFGK132-01	SFGK132-01 [ES], [XFE]	Cap, Rubber	2		
	SFGK133S01	SFGK133S01 [FEE]	Cap, Rubber	2		
30	SFAC520-31	SFAC520-31 [ES], [XFE]	Cabinet (Silver)	1		○
	SFAC521P31	SFAC521P31 [FEE]	Cabinet (Black)	1		○
61	SFNN520X31	SFNN520X31 [ES], [XFE]	Name Plate	1		*○
	SFNN520G31					
	SFNN520S31	SFNN521P31 [FEE]	Name Plate	1		*○
	SFNN521S31					
	SFNN521P31					
			ACCESSORIES			
A1	SFNU520X31	SFNU521P31	Instruction Book	1		○
A3	SFPEN3302	Deletion	– – – – – – – – – – – – – – – – –	0		
A3-1	SFPEW9601	Deletion	– – – – – – – – – – – – – – – – –	0		
A3-2	SFCZV8801	Deletion	– – – – – – – – – – – – – – – – –	0		
A3-3	SFPFV9801	Deletion	– – – – – – – – – – – – – – – – –	0		
A3-4	SFYF05A06	Deletion	– – – – – – – – – – – – – – – – –	0		
			PACKINGS			
P1	SFHP520-31	SFHP520M31 [ES], [XFE]	Carton	1		○
	SFHP521S01					
	SFHP520J31	SFHP521P31 [FEE]	Carton	1		○

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ORDER NO. SD7810-1458

Service Manual

Turntable System

SL-5200 (X), (XAL) (XGE), (E) (XG), (XGF) (XGB) / SL-5210 (E), (XG)

- The model SL-5200 (X) is available in Asia, Latin America, Middle East and, Africa only.
- The model SL-5200 (XAL) is available in Australia only.
- The model SL-5200 (XGE) is available in United Kingdom only.
- The model SL-5200 (E) is available in Scandinavia only.
- The model SL-5200 (XG) is available in European only.
- The model SL-5200 (XGF) is available in France only.
- The model SL-5210 (E) is available in Scandinavia only.
- The model SL-5200 (XGB) is available in European only.
- The model SL-5210 (XG) is available in European only.
- SL-5200 is of silver finish.
- SL-5210 is of black finish.

Specifications (Specifications are subject to change without notice.)

General

Power supply:	~ 110-120/220-240V, 50 or 60 Hz
Power consumption:	12W
Dimensions (W x H x D)	43.0 x 13.0 x 37.5 cm (16-59/64x5-7/64x14-49/64 inches
Weight:	6.9 kg (15.2 lb)

Turntable section

Type:	Direct Drive Automatic Turntable System (Auto-return, Auto-stop)
Drive method:	Direct drive
Motor:	Brushless DC motor
Turntable platter:	Aluminum die-cast 30.4 cm (12")
Turntable speeds:	33-1/3 and 45 rpm
Pitch controls:	Individual adjustment controls, ±6% adjustment range
Starting torque:	1 kg·cm (0.87 lb·in)
Build-up characteristics:	90° or 1/4 rotation to 33-1/3
Speed fluctuation due to load torque: (with quartz control)	0% within 0.9 kg.cm (0.78 lb·in) (even at a stylus pressure of 180 g)
Speed drift: (with quartz control)	Within ±0.002%
Wow and flutter:	0.025% WRMS (JIS C5521) ±0.035% peak (IEC 98A Weighted)
Rumble:	–56 dB (IEC 98A Unweighted) –78 dB (IEC 98A Weighted)

Tonearm section

Type:	Universal tubular arm, staticbalanced type
Effective length:	230 mm (9-1/16")
Overhang:	15 mm (19-32")
Friction:	Within 7 mg (horizontally and vertically)
Effective mass:	12 g (without cartridge)
Tracking error angle:	Within 2°32' (at the outer groove of 30 cm (12") record) Within 0°32' (at the inner groove of 30 cm (12") record)
Offset angel:	22°
Adjustable stylus pressure range:	0 to 2.5 g (stylus pressure direct reading type)
Cartridge weight range:	6 to 9.5 g 13.5 to 17 g (including headshell)
(with shellweight):	3 to 6.5 g 10.5 to 14 g (including headshell)
Headshell weight:	7.5 g

Cartridge section (for set with cartridge)

Type:	Moving magnet
Frequency response:	20 Hz to 25 kHz
Output voltage:	3.5 mV at 1 kHz 5 cm/sec. zero to peak lateral velocity (10 mV at 1 kHz, 10 cm/sec. zero to peak 45° velocity [DIN 45500])
Channel separation:	25 dB at 1 kHz
Channel balance:	Within 2 dB at 1 kHz
Compliance (dynamic):	12×10^{-6} cm/dyne at 100 Hz
Stylus pressure:	1.25±0.25 g (12.5±2.5 mN)
Load impedance:	47 kΩ to 100 kΩ
Weight:	6.0 (cartridge only)
Replacement stylus:	EPS-206ED

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

TECHNISCHE DATEN (Änderungen der technischen Daten vorbehalten.)

Allgemeine Daten

Netzspannung:	~110–120/220–240 V, 50/60 Hz Wechselstrom
Leistungsaufnahme:	12 W
Abmessungen: (B x H x T)	43,0 x 13,0 x 37,5 cm
Gewicht:	6.9 kg

Plattenspielerteil

Typ:	Automatisches Plattenspielersystem mit Direktantrieb, (Auto-Rückkehr, Auto-Stop.)
Antrieb:	Direktantrieb
Motor:	Kollektorloser Gleichstrommotor
Plattenteller:	Aluminium-Spritzguß 30,4 cm ϕ
Plattenteller-Drehzahlen:	33-1/3 und 45 U/min
Geschwindigkeits-Feineinstellung:	Für jede Geschwindigkeit gesondert, mittels Einsteller, ±6% Einstellbereich
Anlaufdrehmoment:	1 kg·cm
Drehzahl-Hochlaufdauer:	90° oder 1/4 Umdrehung bei 33-1/3 U/min
Drehzahl-Schwankung wegen Lastschwankungen:	0% innerhalb 0,9 kg·cm (sogar bei einer Auflagekraft von 180 g)
Drehzahl-Abweichung:	Innerhalb ±0,002%
Gleichlaufschwankungen:	0,025% WRMS (JIS C5521) ±0,035% (IEC 98A bewertet)
Rumpel-Frernd-spannungsabstand:	–56 dB (IEC 98A unbewertet)
Rumpel-Geräusch-spannungsabstand:	–78 dB (IEC 98A bewertet)

Tonarmteil

Typ:	Universal-Rohrtonarm, statisch ausbalanciert
Effektive Länge:	230 mm
Überhang:	15 mm
Mechanischere-Wiederstand:	weniger als 7 mg (horizontal, vertikal)
Effektive Masse:	12 g (ohne Tonabnehmer)
Spurfehlwinkel:	Innerhalb 2°32′ (bei der äußeren Rille einer 30 cm-Schallplatte) Innerhalb 0°32′ (bei der inneren Rille einer 30 cm-Schallplatte)
Kröpfungswinkel:	22°
Auflagedruck-Einstellbereich:	0 ~2,5 g (direkt ablesbare Einstellung)
Zulässiger Tonabnehmer Gewicht-bereich:	6 ~9,5 g 13,5 ~17 g (einschleißlich Tonarmkopf)
(mit Tonarmkopf-Gewicht):	3 ~6,5 g 10,5 ~14 g (einschließlich Tonarmkopf)
Tonarmkopf-Gewicht:	7,5 g

Tonabnehmerteil (für Gerät mit Tonabnehmer)

Typ:	Magnetischer Tonabnehmer
Frequenzgang:	20 Hz to 25 kHz
Ausgangsspannung:	3,5 mV bei 1 kHz 5 cm/sec Null-zu Spitze, lateral (10 mV bei 1 kHz 10 cm/sec Nul-zu Spitze, 45° [DIN 45500])
Kanaltrennung:	25 dB bei 1 kHz
Kanalabweichung:	Innerhalb 2 dB bei 1 kHz
Nachgiebigkeit (dynamisch):	12 x 10^{-6}cm/dyn bei 100 Hz
Auflagekraft:	1,25 ±0,25 g 12,5 ± 2,5 mN)
Impedanz:	47 kΩ bis 100 k
Gewicht:	6,0 g (ohne Tonarmkopf)
Ersatznadel:	EPS-206ED

CARACTERISTIQUES TECHNIQUES (Les sésifications sont susceptibles d'être modifiées préavis.

Généralités

Alimentation:	Alternatif 110–120/220–240 V, 50 ou 60 Hz
Consommation:	12 W
Dimensions: (L x H x P)	43,0 x 13,0 x 37,5 cm
Poids:	6.9 kg

Platine de lecture

Type:	Système de platine automatique à entraînement direct, (Auto-retour, Auto-arrét)
Système d'entraînement:	Entraînement direct
Moteur:	Moteur C.C. sans balais
Plateau de lecture:	Aluminium moulé sous pression Diamètre 30,4 cm
Vitesses de rotation:	33-1/3 et 45 t/p.m.
Commandes de précision de la vitesse:	Commandes de réglage individuelles; plage de réglage ±6%
Couple de démarrage:	1 kg·cm
Caractéristiques d'augmentation:	90° ou 1/4 de rotation à 33-1/3 t/p.m.
Variation de vitesse dûe au couple de charge:	0% en deçà de 0,9 kg·cm (même à une pression de la pointe de 180 g)
Déviation du nombre de tours:	En deçà de ±0,002%
Pleurage et scintillement:	0,025% de valeur efficace (JIS C5521) ±0,035% de crête (IEC 98A Pondéré)
Ronflement:	–56 dB (IEC 98A Non Pondéré) –78 dB (IEC 98A Pondéré)

Bras de lecture

Type:	Bras tubulaire universel, de type á équilibrage statique
Longueur effective:	230 mm
Porte-à-faux:	15 mm
Frottement:	Moins de 7 mg (horizontal et vertical)
Masse réelle:	12 g (sans la cellule pick-up)
Angle d'erreur de piste:	En deçà de 2°32′ (au sillon extérieur d'un disque de 30 cm) En deçà de 0°32′ (au sillon intérieur d'un disque de 30 cm)
Angle de décalage:	22°
Plage de réglage de la pression d'appui:	0 à 2,5 g (type à lecture directe de la pression d'appui de la pointe)
Gamme de poids de la cellule pick-up utilisable:	6 à 9,5 g 13,5 à 17 g (y compris la coque porte-cellule)
(avec contrepoids de la cellule):	3 à 6,5 10,5 à 14 g (y compris la coque porte-cellule)
Poids de la coquille porte-cellule:	7,5 g

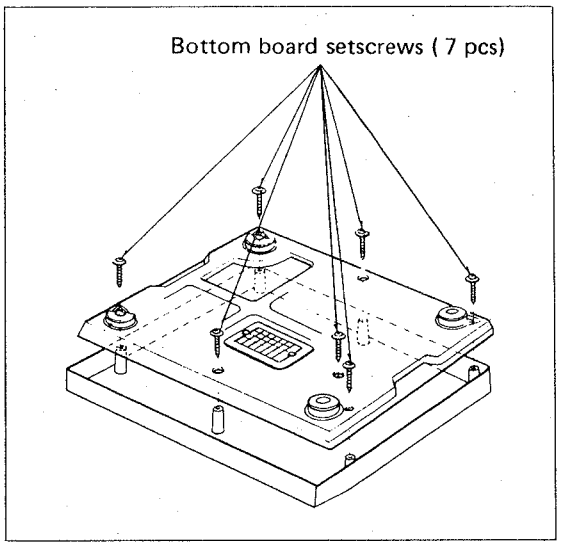
Cellule pick-up (pour appareil avec cellule pick-up)

Type:	Aimant mobile
Réponse en fréquence:	20 Hz à 25 kHz
Tension de sortie:	3,5 mV à 1 kHz 5 cm/sec., zéro à vitesse latérale de crête (10 mV à 1 kHz, 10 cm/sec, zéro à vitesse 45° de crête [DIN 4500])
Séparation de canal:	25 dB à 1 kHz
Equillibrage des canaux:	En deçà de 2 dB à 1 kHz
Elasticité (dynamique):	12 x 10^{-6}cm/dyne à 100 Hz
Pression de la pointe de lecture:	1,25 ±0,25 gramme (12,5 ± 2,5 mN)
Impédance de charge:	47 kΩ à 100 kΩ
Poids:	6,0 grammes (cellule seule)
Pointe de lecture de remplacement:	EPS-206ED

■ DISASSEMBLY PROCEDURE

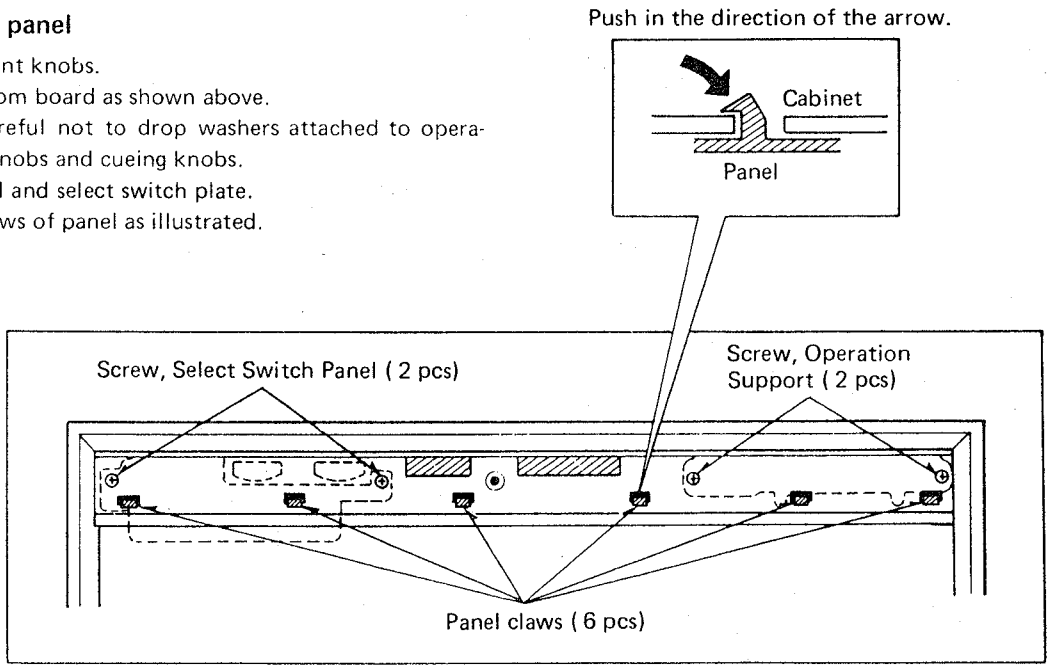
How to remove bottom board

1. Remove head shell and turntable.
2. Secure arm with arm clamp.
3. Turn the set upside-down taking care not to damage dust cover.
4. Remove bottom board set-screws (7 pcs).



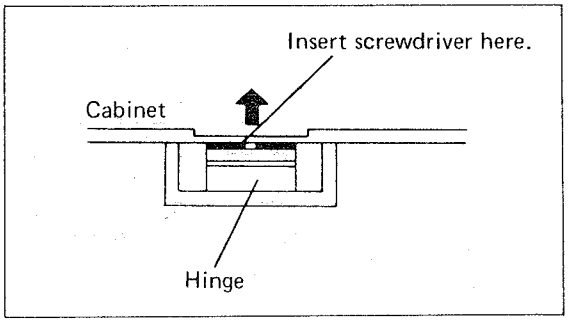
How to remove panel

1. Remove 6 front knobs.
2. Remove bottom board as shown above.
   Note. Be careful not to drop washers attached to operation knobs and cueing knobs.
3. Remove panel and select switch plate.
4. Remove 6 claws of panel as illustrated.


Push in the direction of the arrow.
Cabinet
Panel
Screw, Select Switch Panel (2 pcs)
Screw, Operation Support (2 pcs)
Panel claws (6 pcs)

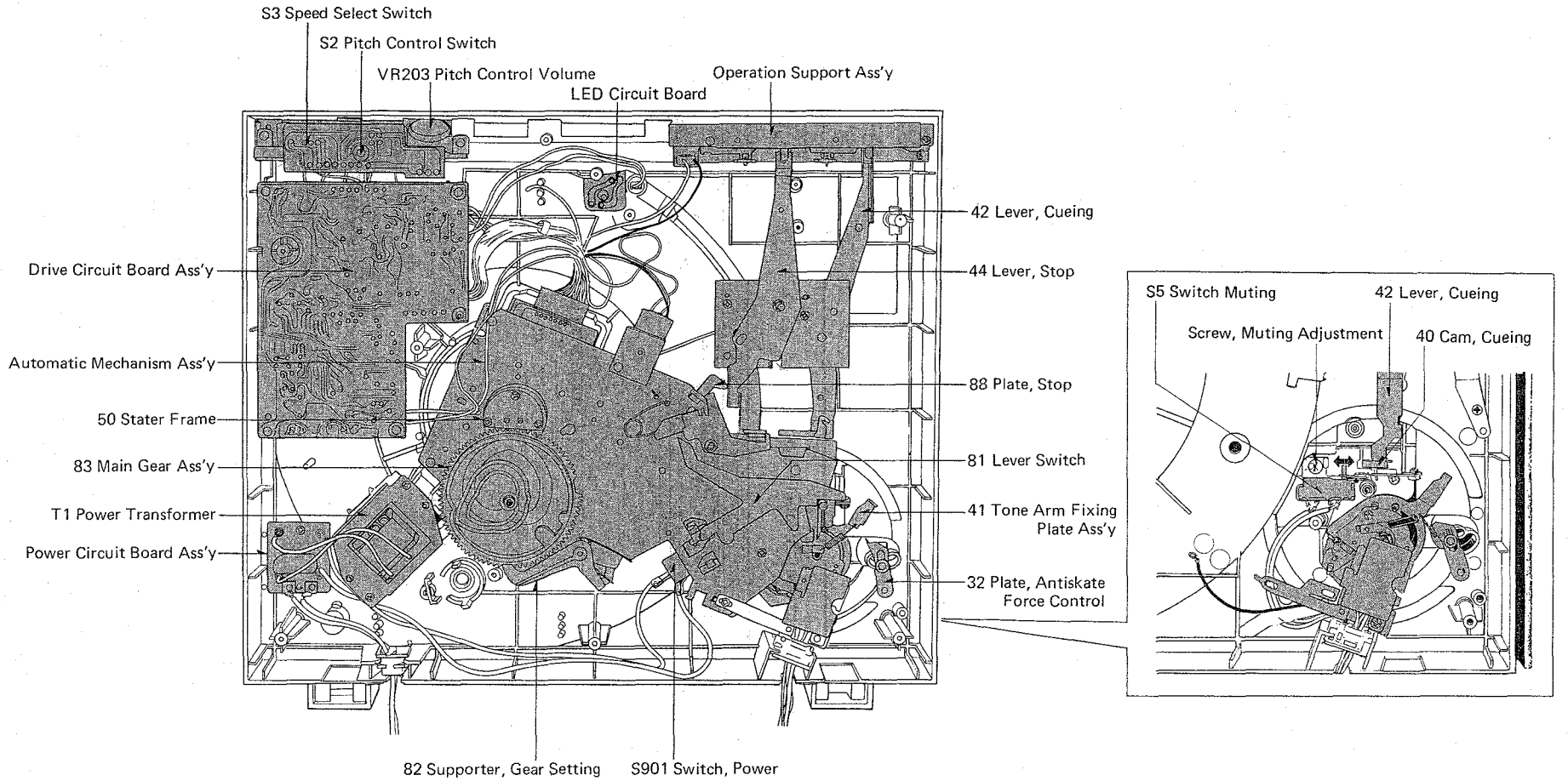
How to remove hinge

Turn the set upside-down and then insert screwdriver between hinge and cabinet. Deform the cabinet as shown by the arrow in the illustration.



Remarks:
For the disassembly of parts (mechanical board, circuit board, etc.) other than the above, refer to the parts arrangement and development diagrams provided in this manual.

■ PARTS ARRANGEMENT DIAGRAM



CABINET ASS'Y

ARM BASE ASS'Y

■ PARTS IDENTIFICATION

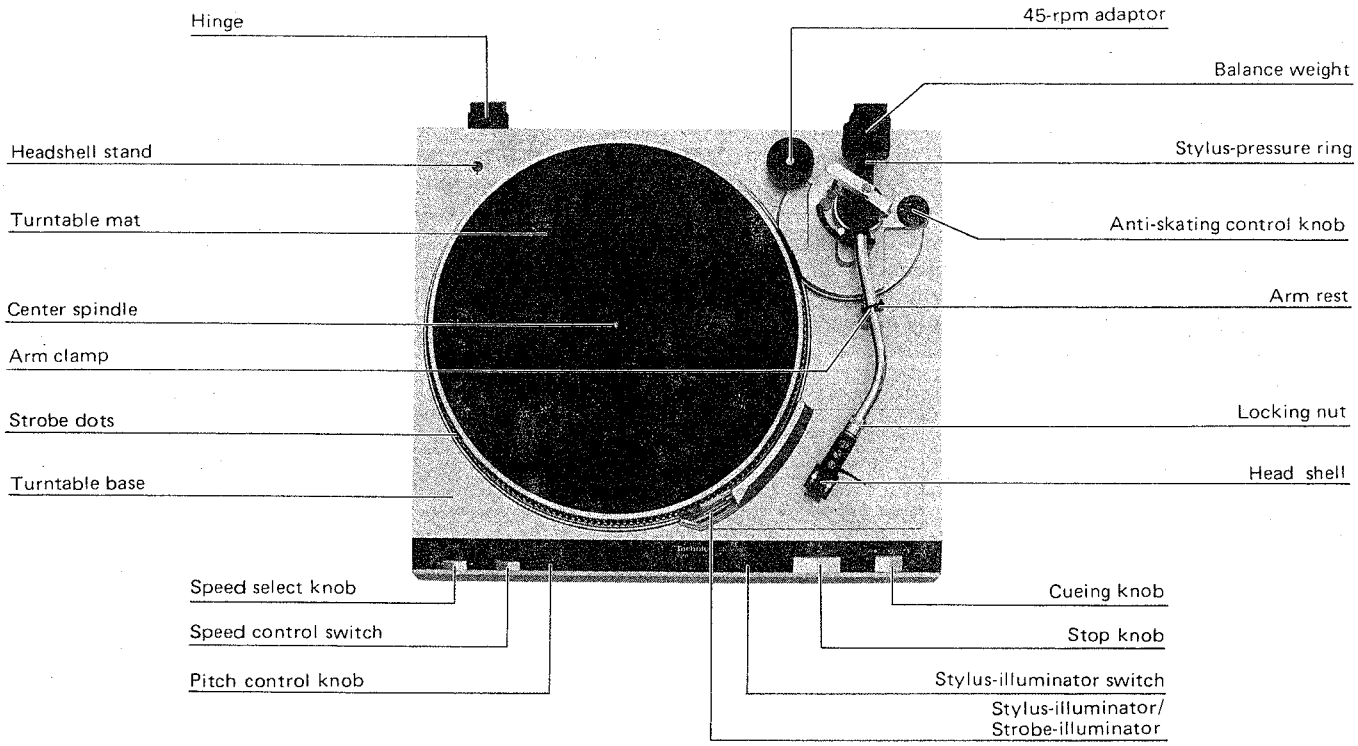


Fig. 1

■ FEATURES

High performance electronic circuit and full-cycle detection FG for quartz phase-locked control of integral structure superior in rotational characteristics

Based on an electronic circuit composed of 3 kinds of highly integrated ICs developed for the SL-1300MK2 series and the full-cycle (360°) detection FG, the quartz phase locked control system with a crystal oscillator as its standard oscillator has been adopted. For utilization of high accuracy crystal oscillation, the detection range is effected through 360° by means of the full-cycle detection FG of the motor stator for detection of revolutions, with a consequent extremely stable rotational accuracy.

Due to the employment of the integral structure, high torque DD motor, the starting time is practically instantaneous at 0.7 second (1/4) revolution. Moreover, through the quartz phase locked control system employed, speed deviation is 0 up to a stylus pressure of 180 g, while a pitch control of ±6% is possible.

Double-TNRC vibration-damping construction

The newly developed acoustic material* TNRC, which is high in vibration damping and superior in attenuation characteristics has been employed in the cabinet, while the base has another thick and heavy TNRC base which has been adopted for the SL-1300MK2 series.

Double TNRC construction is designed based on Technics non-resonance concept.

*TNRC – Technics Non-Resonance Compound

Equipped with a stylus illuminator (stylus tip lighting) that facilitates selection of music even in a dark place

3 row strobe dots capable of fine adjustments of +3.3% and −3.3%

Low-mass, gimbal-suspension tonearm with an arm friction of 7 mg and a muting circuit incorporated

The gimbal-suspension tonearm unique to Technics has descended from the tonearms for the SL-1300MK2 series and is extremely sensitive with an arm friction of 7 mg (horizontal and vertical) and is of a low mass design having an effective mass of only 12 g. For using a high compliance cartridge, the low range resonance frequency is set in the vicinity of 10 Hz. Furthermore, since a muting mechanism is adopted for eliminating noises during the descent or ascent stylus tip to and from the record.

All Front-Panel Controls

The advancement to complete front-panel control marks a big step forward in turntable operation, not only because of the greater convenience, but also because of the greater protection from dust, as the dust cover can stay closed.

Tonearm Cueing Controlled from Front Panel

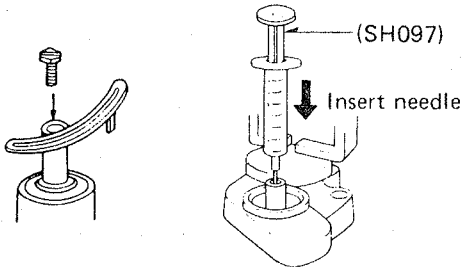
The tonearm is raised and lowered softly by a viscous-damped cueing lifter. Even with the dust cover closed, a cueing can be easily performed as the control is located on the front panel.

Light, Aluminum Diecast Headshell

How to Inject Silicon Oil

After prolongued use the tone arm set down time may become too rapid in such rare case cueing oil should be added.
Please follow these instructions for applying the silicon oil:

1. Remove the arm height adjust screw to detach the arm lift
2. Insert the needle of the injector into the cylinder of the arm lift shaft and inject a small amount of silicon oil.
3. Slowly remove the injector.
4. Re-install arm lift bar and attach the arm height adjust screw.
5. Adjust the arm lift height.
   (Refer to the adjustment procedure)



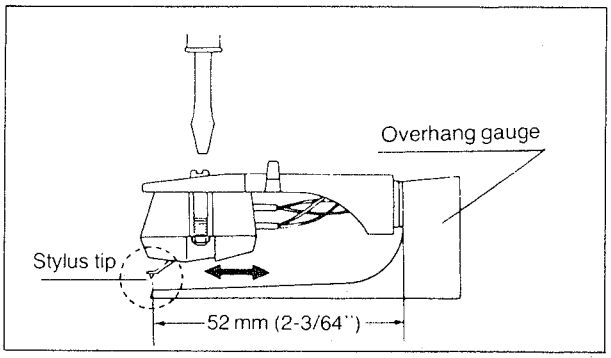
■ Adjustment of overhang

For the unit with overhang gauge

1. Insert the headshell into the gauge.
2. Loosen the mounting screws and move the cartridge forward or backward until the stylus tip lines up with the edge of the gauge.
3. Tighten the mounting screws without moving the cartridge.

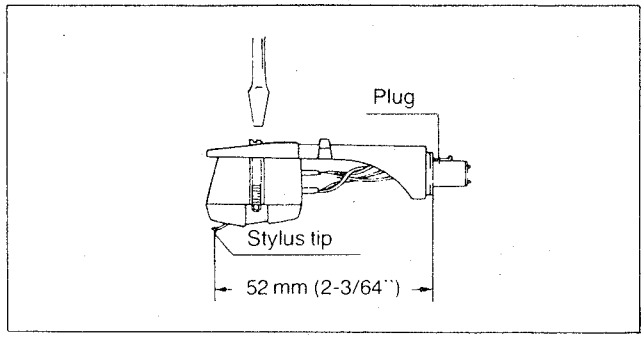
Note:

Your cartridge is now adjusted for lowest tracking error and minimum distortion.
This gauge is exclusively designed for this tonearm.



For the unit without overhang gauge

The overhang of this unit is 15 mm.
Loosen the mounting screws and move the cartridge forward or backward until the distance between the stylus tip and the plug becomes 52 mm (2-3/64") as shown in the picture.
Tighten the mounting screws without moving the cartridge.



■ HOW TO OPERATE

Manual play of record

1. Place a record on the turntable mat.
2. Set the speed select knob to the desired record speed. (See Fig. 2)

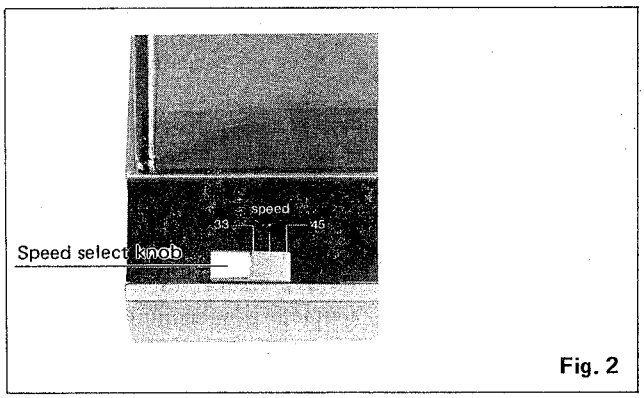


Fig. 2

3. Remove the stylus protector, if your cartridge has a detachable one.
4. Release the arm clamp.
5. Set the cueing knob to the "▼" position. (See Fig. 3)
6. Move the tonearm over the record and set the cueing knob to the "▼" position. (See Fig. 4)
   The tonearm will descend slowly onto the record and play will begin. When the tonearm is moved toward the record, the power is turned on and the turntable platter will start rotating.

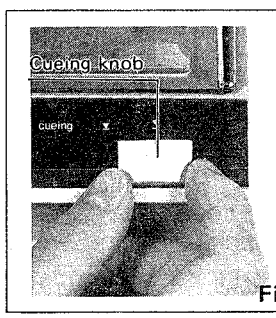


Fig. 3

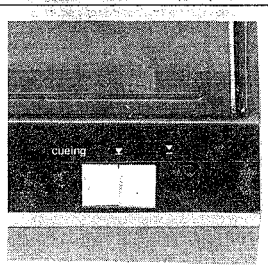


Fig. 4

7. When play is finished, the tonearm will automatically return to the arm rest (auto-return), and the turntable platter will stop rotation. The turntable platter will continue to rotate briefly due to its own inertia.
   If the unit is not to be used for some time, set the speed select knob to the neutral "•" position.
   Attach the stylus protector again, if you have one, to guard the stylus tip from damage.

When you play a 45-rpm record with a large center hole

Place the 45-rpm adaptor on the center spindle. Set the speed select knob to the "45" position.

How to stop play

Set the start/stop knob to the "**stop**" position. (See Fig. 5)
The tonearm automatically returns to the arm rest, and the turntable stops rotating.
Of course, the unit will automatically shut off even when the tonearm is manually returned to its arm rest directly.
Note:
Before you operate the start/stop knob, make sure that the "**memo-repeat knob is set at the "0"** position
If this knob is set at any position other than "**0**", the repeat play is continued by the number of times indicated, even if you set the start/stop knob to the "**stop**" position.

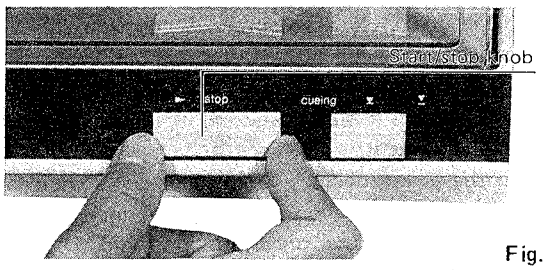


Fig. 5

How to suspend play

Set the cueing knob to the "▼" position.
The stylus tip of the cartridge will be lifted from the record.

If the unit is not to be used for some time

Secure the tonearm with the arm clamp.
Attach the stylus protector, if your cartridge has one, to guard the stylus from damage.
Close the dust cover.

About on/off of the stylus illuminator (See Fig. 6)

The unit is equipped with a stylus illuminator for lighting the stylus tip during performance as well as a strobe illuminator (LED).
When the switch for the stylus illuminator is set to the "•" position, the stylus illuminator and strobe illuminator are lit upon rotation of the turntable.
If the stylus illuminator is not required, turn the stylus illuminator switch to the "○" position.
Then, the lamp for stylus tip illumination goes out and only the LED for the strobe illuminator is lit.

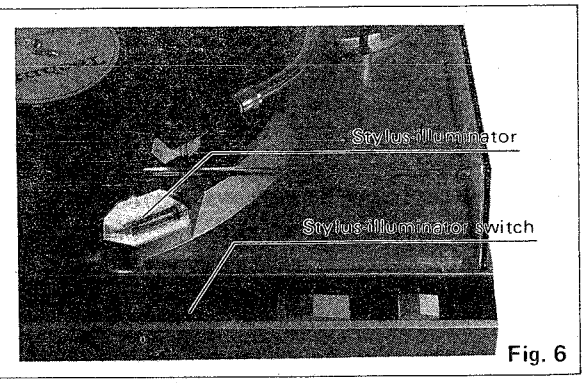


Fig. 6

■ ADJUSTMENTS

Adjustments of horizontal zero (0) balance and stylus pressure

1. Before adjusting horizontal zero (0) balance, check the following:
   Make sure that the speed select knob is in the "•" (neutral) position.
   Make sure that the cueing knob is in the "▼" position.
   Make sure that the anti-skating control knob is at "0" position.
   Make sure that the "**memo-repeat**" knob is in the "0" position.
2. Remove the stylus protector, if your cartridge has a detachable one. Be careful not to touch your fingers to the stylus tip.
3. Release the arm clamp and lift the tonearm from the arm rest to free it.
   Turn the entire balance weight clockwise (indicated by the arrow "**A**") or counterclockwise (indicated by the arrow "**B**") until the tonearm is approximately balanced horizontally (floats freely). **(See Figs. 7 and 8.)**

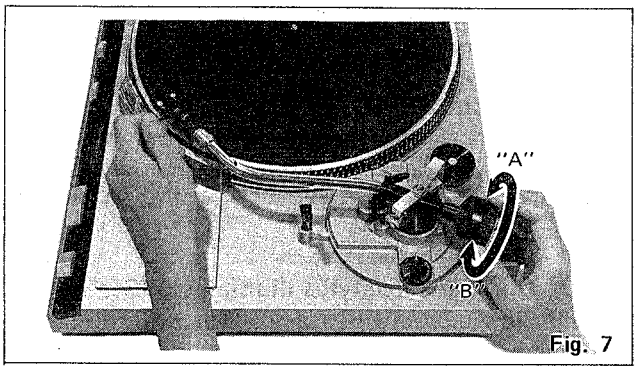


Fig. 7

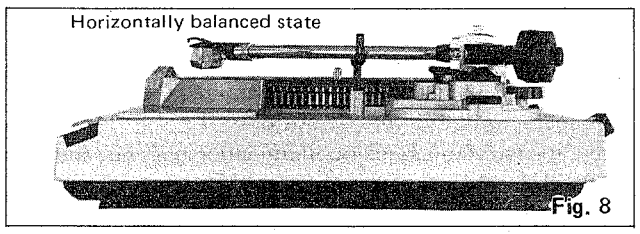


Fig. 8

Note:
During the adjustment of the horizontal zero (0) balance, be careful that the stylus tip of the cartridge does not contact the turntable mat or turntable base.

4. After the tonearm is horizontally zero (0) balanced, temporarily refasten the tonearm with the arm clamp.
5. Hold the balance weight stationary with one hand as shown in the picture, and rotate only the stylus-pressure ring to bring the numeral "**0**" of the ring into alignment with the center line on the tonearm rear shaft.
   The adjustment of the horizontal zero (0) balance is now completed.

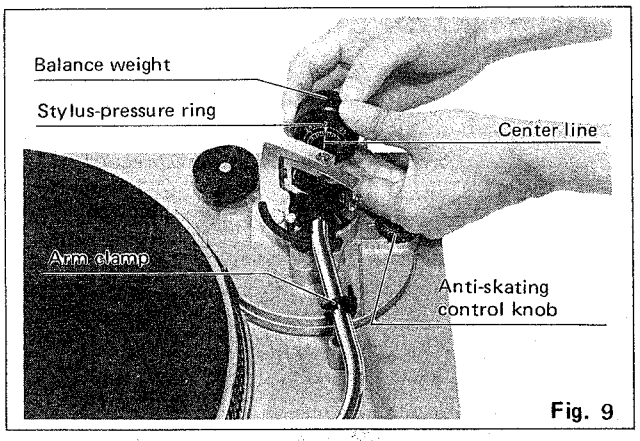


Fig. 9

6. After adjusting the horizontal zero (0) balance, turn the balance weight clockwise in the direction of the arrow and align to the correct stylus pressure. **(See Fig. 10)**
   (Follow the cartridge manufacturer's recommendation.)
   As the stylus-pressure ring moves in step with the balance weight proper stylus pressure can be selected by directly reading the graduated ring.

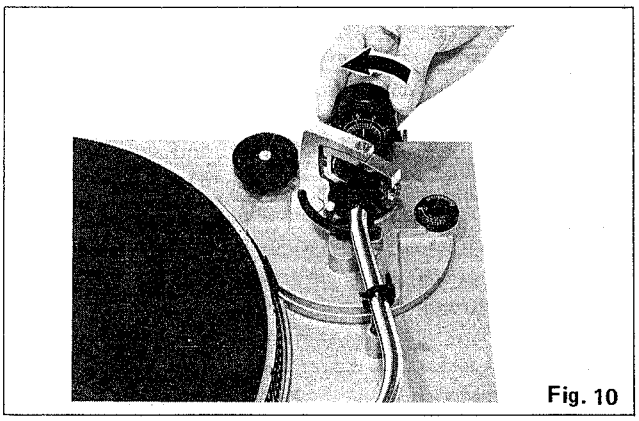


Fig. 10

Note:
Set the stylus pressure to the maximum recommended value for your cartridge in cases where the record has an extremely high recording level or where the unit is operated in a room at low temperature, or in places in which the unit is subjected to vibrations.

Adjustment of anti-skating control

Set the anti-skating control knob to the same value as the stylus pressure. **(See Fig. 11.)**

Note:
When a cartridge with integral dust brush is used, follow the cartridge manufacturer's recommendation for adjusting both stylus pressure and anti-skating force.

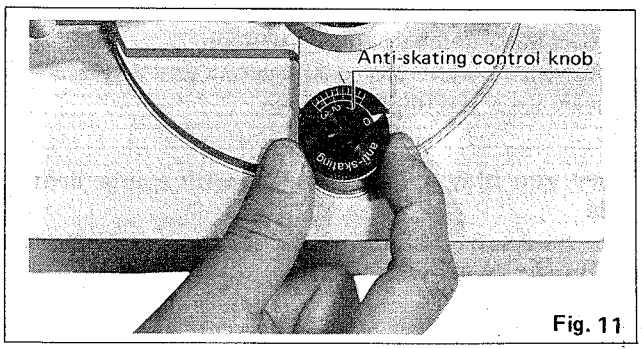


Fig. 11

Adjustment of arm-lift height (See Figs. 12 and 13)

The arm-lift height (distance between the stylus tip and record surface when queing knob is at the "▼" position) has been adjusted at the factory before shipment to approximately 5 to 10 mm.

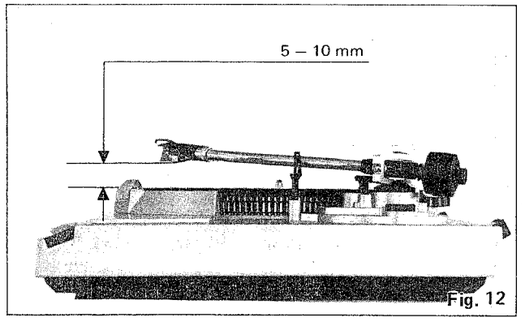


Fig. 12

For using different cartridges available on the market or when further adjustments are particularly necessary, make adjustment as follows:

1. Set the speed select knob to the "•" position to prevent rotation of the turntable platter.
2. Move the tonearm toward the center spindle.
   Attach the stylus protector, if available, to guard the stylus tip from damage.
3. Turn the adjustment screw clockwise or counterclockwise, while pushing the arm lift down.

Clockwise rotation
—distance between the record and stylus tip is reduced.
Counterclockwise rotation
—distance between the record and stylus tip is increased.

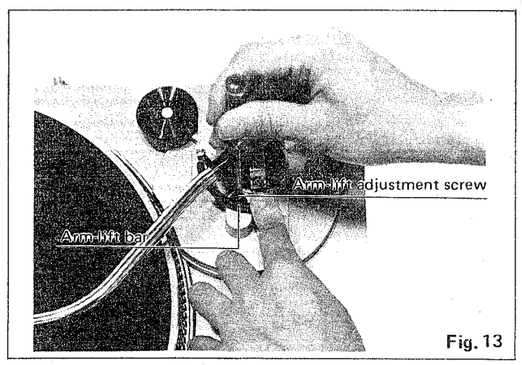


Fig. 13

Note:
As the adjusting screw has a hexagonal head, be sure to make the adjustment while depressing the arm lift, or the screw will not move freely.
Also be sure that the hexagonal head retracts correctly into the arm lift when the latter is released.

Adjustment for automatic return position (See Fig. 14)

(Remove the turntable mat.)
In cases where the tonearm tends to return before the playing has finished.
—rotate clockwise.
In cases where the tonearm fails to return after the last groove of the record has been played.
—rotate counterclockwise.

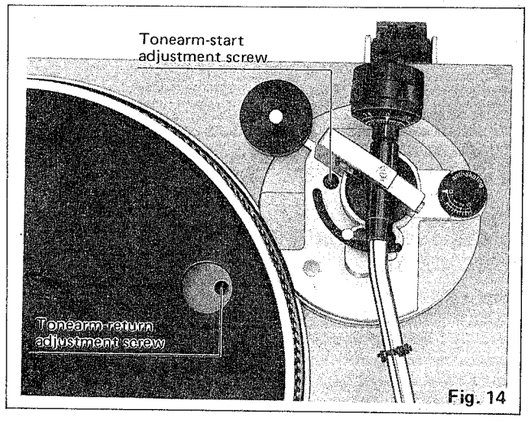


Fig. 14

Fine speed adjustment (See Fig. 15 and 16)

The strobe dots on the outer periphery of the turntable enable you to make a fine speed adjustment of +3.3% or –3.3%.

1. Set the speed control switch to the position **"adj."**.
2. While turning the pitch control knob to the "+" side (or the "–" side), adjust to the degree at which the strobe dots on the upper stage (or lower stage) look as if they were stationary to obtain a pitch of +3.3% (or –3.3%).
3. Upon setting the speed control switch to the position **"quartz"**, regular revolutions are available.

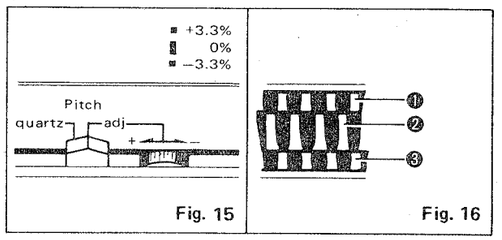


Fig. 15

Fig. 16

❶ When the strobe dots at the upper stage appear stationary, the revolution is set at +3.3%.
❷ At the quartz position, regular revolutions are available.
❸ When the strobe dot at the lower stage appear stationary, the revolution is set at –3.3%.

Muting adjustment (See Fig. 17)

This unit employs a muting mechanism for eliminating the unpleasant noise produced when the stylus tip descends to or leaves the record. In cases where adjustments for the muting time are required, for example, after the arm lift height adjustment, etc., follow the procedures as given below.
If the signal of a record is not heard immediately after descent of the stylus tip onto the record, —**turn the screw clockwise.**
If any unpleasant noise is heard upon descent of the stylus tip onto the record, —**turn the screw counterclockwise**

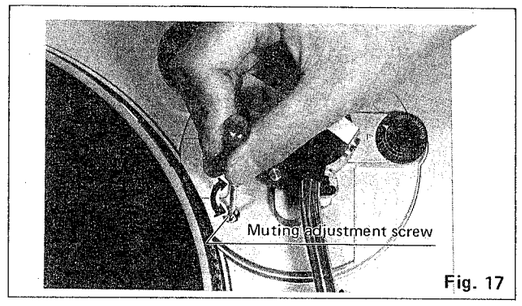


Fig. 17

■ JUSTIERUNGEN

Justierung der tonarmlifthöhe

Die Tonarmlifthöhe, d.h. der Abstand Zwischen Nadelspitze und Schallplattenoberfläche wenn der Lift-Schieber in der "▼"-Position steht, ist werkseitig auf 5–10 mm eingestellt worden. **(Vgl. Abb. 12.)**
Wenn Sie einen anderen Tonabnehmertyp verwenden, oder, wenn weitere Justierungen unbedingt nötig sind, nehmen Sie die Justierungen auf folgende Weise vor:

1. Stellen Sie den Drehzahl-Wahlschieber in die "•"-Position, um zu verhindern, daß sich der Plattenteller dreht.
2. Schwenken Sie den Tonarm gegen die Plattenteller achse.
   Setzen Sie den Nadelschutz auf, damit die Nadelspitze vor Beschädigung geschützt wird.
3. Drehen Sie die Justierschraube im Uhrzeiger- oder Gegenuhrzeigersinn, währenddem Sie die Tonarmliftführung nach unten drücken. **(Vgl. Abb. 13.)**
   Drehung im Uhrzeigersinn
   —Der Abstand wird kleiner.
   Drehung im Gegenuhrzeigersinn
   —Der Abstand wird größer.
   Anmerkung:
   Da die Justierschraube einen Sechskantkopf hat, muß die Tonarmliftführung während dem Justieren unbedingt gedrückt gehalten werden, damit sich die Schraube leicht drehen läßt.
   Vergewissern Sie sich, daß Sechskantkopf in die Tonarmliftführung zurückkehrt, wenn diese losgelassen wird.

Justierung des Abschaltpunktes der Automatik (Vgl. Abb. 14)

(Plattentellerauflage abnehmen.)
Falls der Tonam zu früh zunückkehrt.
—Im Uhrzeigersinn drehen.
Falls der Tonarm nach Erreichen der Auslaufrille nicht zurückkehrt.
—Im Gegenuhrzeigersinn drehen.

Geschwindigkeits-Feineinstellung (Vgl. Abbs. 15, 16)

Die Stroboskoppunkte am Plattentellerrand ermöglichen die Feinregulierung der Drehzahl um +3,3% oder –3,3%.

1. Stellen Sie den Quarzergelung-Schalter in die **"Adj."** Position.
2. Regulieren Sie durch Drehen des Feineinstellknopfes in die "+"-Richtung (oder "–"-Richtung), bis die oberen (oder unteren) Stroboskoppunkte stillzustehen scheinen, und somit eine Drehzahl von +3,3% (oder –3,3%) erreicht ist.
3. Nach Umstellen des Quarzergelung-Schalter in die **"quartz"**-Position ist die genaue Drehzahl eingestellt.

Dämpfungsjustierung (Vgl. Abb. 17.)

Dieses Gerät ist mit einem Dämpfungsmechanismus zur Ausscheidung der unerwünschten Geräusche beim Absenken und Abheben der Nadelspitze ausgestattet.
In Fällen, wo eine Justierung der Dämpfungsdauer erforderlich ist, z.B. nach erforlgter Justierung der Tonarmlifthöhe usw., nehmen Sie die Justierung auf folgende Weise vor:
Falls die Wiedergabe nicht sofort nach erfolgtem Absenken der Nadelspitze auf die Schallplatte erfolgt:—**die Schraube im Uhrzeigersinn drehen.**
Falls störende Geräusche beim Absenken der Nadelspitze auf die Schallplatte gehört werden:—**die Schraube im Gegenuhrzeigersinndrehen.**

■ REGL

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3. Tourner
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   —La dist
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   Nota:
   Comme
   s'assurer
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   Vérifier
   dans l'éle

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dehors du d
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Dans le cas
loin du sillo
—Déplacer c

Réglage pr

Les points
du plateau
vitesse de +3

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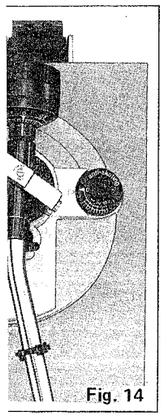
Fig. 14

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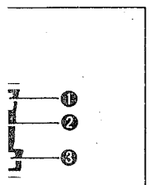
Fig. 16

per stage appear
%.
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Muting adjustment (See Fig. 17)

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If the signal of a record is not heard immediately after descent of the stylus tip onto the record, **—turn the screw clockwise.**

If any unpleasant noise is heard upon descent of the stylus tip onto the record, **—turn the screw counterclockwise**

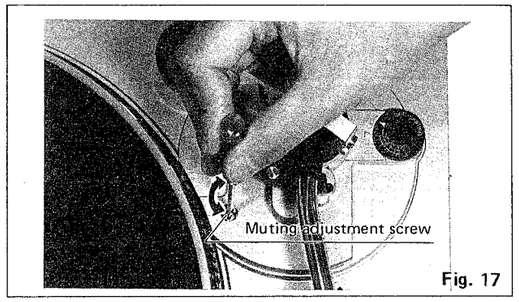

Fig. 17

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Wenn Sie einen anderen Tonabnehmertyp verwenden, oder, wenn weitere Justierungen unbedingt nötig sind, nehmen Sie die Justierungen auf folgende Weise vor:

1. Stellen Sie den Drehzahl-Wahlschieber in die "•"-Position, um zu verhindern, daß sich der Plattenteller dreht.
2. Schwenken Sie den Tonarm gegen die Plattenteller achse.
   Setzen Sie den Nadelschutz auf, damit die Nadelspitze vor Beschädigung geschützt wird.
3. Drehen Sie die Justierschraube im Uhrzeiger- oder Gegenuhrzeigersinn, währenddem Sie die Tonarmliftführung nach unten drücken. **(Vgl. Abb. 13.)**
   Drehung im Uhrzeigersinn
   —Der Abstand wird kleiner.
   Drehung im Gegenuhrzeigersinn
   —Der Abstand wird größer.
   Anmerkung:
   Da die Justierschraube einen Sechskantkopf hat, muß die Tonarmliftführung während dem Justieren unbedingt gedrückt gehalten werden, damit sich die Schraube leicht drehen läßt.
   Vergewissern Sie sich, daß Sechskantkopf in die Tonarmliftführung zurückkehrt, wenn diese losgelassen wird.

Justierung des Abschaltpunktes der Automatik (Vgl. Abb. 14)

(Plattentellerauflage abnehmen.)

Falls der Tonam zu früh zunückkehrt.

—Im Uhrzeigersinn drehen.

Falls der Tonarm nach Erreichen der Auslaufrille nicht zurückkehrt.

—Im Gegenuhrzeigersinn drehen.

Geschwindigkeits-Feineinstellung (Vgl. Abbs. 15, 16)

Die Stroboskoppunkte am Plattentellerrand ermöglichen die Feinregulierung der Drehzahl um +3,3% oder −3,3%.

1. Stellen Sie den Quarzergelung-Schalter in die **"Adj."** Position.
2. Regulieren Sie durch Drehen des Feineinstellknopfes in die "+"-Richtung (oder "−"-Richtung), bis die oberen (oder unteren) Stroboskoppunkte stillzustehen scheinen, und somit eine Drehzahl von +3,3% (oder −3,3%) erreicht ist.
3. Nach Umstellen des Quarzergelung-Schalter in die **"quartz"**-Position ist die genaue Drehzahl eingestellt.

Dämpfungsjustierung (Vgl. Abb. 17.)

Dieses Gerät ist mit einem Dämpfungsmechanismus zur Ausscheidung der unerwünschten Geräusche beim Absenken und Abheben der Nadelspitze ausgestattet.

In Fällen, wo eine Justierung der Dämpfungsdauer erforderlich ist, z.B. nach erforlgter Justierung der Tonarmlifthöhe usw., nehmen Sie die Justierung auf folgende Weise vor:

Falls die Wiedergabe nicht sofort nach erfolgtem Absenken der Nadelspitze auf die Schallplatte erfolgt:**—die Schraube im Uhrzeigersinn drehen.**

Falls störende Geräusche beim Absenken der Nadelspitze auf die Schallplatte gehört werden:**—die Schraube im Gegenuhrzeigersinndrehen.**

■ REGLAGES

Mise au point de la hauteur de l'élévateur du bras

La hauteur de l'élévateur du bras (distance entre l'extrémité de la pointe de lecture et la surface du disque, lorsque la manette de pose et de relevage du bras est à la position "▼") a été réglée en usine avant son départ sur approximativement 5 á 10 mm. **(Voir Fig. 12.)**

Pour l'utilisation des diverses cellules pick-up disponibles sur le marché ou lorsque des mises au point ultérieures sont particulièrement nécessaires, faire les réglages d'après ce qui suit:

1. Placer la manette sélectrice de vitesse sur la position "•" pour éviter la rotation du plateau.
2. Déplacer le bras de lecture vers le pivot central.
   Fixer le capot protecteur de la pointe de lecture, s'illen existe un, pour protéger l'extrémité de la pointe d'une éventuelle détérioration.
3. Tourner la vis de réglage dans le sens des aiguilles d'une montre ou dans le sens inverse, tout en abaissant l'élévateur du bras. **(Voir Fig. 13.)**
   Rotation dans le sens des aiguilles d'une montre.
   —La distance entre la surface du disque et l'extrémité de la pointe de lecture diminue.
   Rotation dans le sens contraire des aiguilles d'une montre.
   —La distance entre la surface du disque et l'extrémité de la pointe de lecture augmente.
   Nota:
   Comme la vis de réglage possède une tête hexagonale, s'assurer d'effectuer la mise au point tout en abaissant l'élévateur du bras, sinon la vis ne bougera pas librement.
   Vérifier que la tête hexagonale se retire correctement dans l'élévateur du bras quand ce dernier est libéré.

Mise au point pour une position de marche automatique. (Voir Fig. 14.)

(Retirer le capuchon en caoutchouc.)

Dnas le cas où la tête de la pointe de lecture s'abaisse en dehors du disque.

—Déplacer dans le sens des aiguiles d'une montre.

Dans le cas où la tête de la pointe de lecture s'abaisse trop loin du sillon enregistre.

—Déplacer dans le sens contraire des aiguilles d'une montre.

Réglage précis de la vitesse (Voir Figs. 15, 16.)

Les points stroboscopiques sur la circonférence extérieure du plateau de lecture permettent un réglage précis de la vitesse de +3,3% ou de −3,3%.

1. Régler l'interrupteur de réglage de la vitesse sur la position **"adj"**.
   (mise au point).
2. Tout en tournant la manette de réglage de précision de la vitesse du côté "+" (ou du côté "−"), mettre au point less points stroboscopiques sur l'étage supérieur (ou sur l'étage inférieur) qui ont l'air d'être stationnaires, pour obtenir une précision de la vitesse de +3,3% (ou −3,3%).
3. En réglant l'interrupteur de réglage de la vitesse sur la position **"quartz"**, des rotations uniformes sont possibles.

Réglage de l'amortissement (Voir Fig. 17.)

Cet appareil utilise un mécanisme d'amortissement pour l'élimination des bruits déplaisants produits lorsque l'extrémité de la pointe de lecture s'abaisse sur le disque ou s'en relève.

Dans le cas où des mises au point seraient nécessaires, par exemple, après le réglage de la hauteur du souleveur du bras, etc., suivre les procédures données ci-dessous.

Si l'exécution du disque ne se fait pas entendre immédiatement après la descente de l'extrémité de la pointe de lecture sur le disque,**—tourner la vis dans le sens des aiguilles d'une montre.**

Si un bruit déplaisant est entendu lors de la descente de la tête de la pointe de'lecture sur le disque,**—toumer la vis dans le sens inverse des aiguilles d'une montre.**

⊕B Lines
Earth (Ground) Lines

Printed Circuit Board

■ REPLAC

1 2 3 4 5 6 7 8 9 10 11

A B C D E F G H

STYLUS-ILLUMINATOR SWITCH

STYLUS-ILLUMINATOR LAMP

LED CIRCUIT BOARD

TO MOTOR

POWER SWITCH

POWER TRANSFORMER

POWER TRANSISTOR CIRCUIT BOARD

SERECT CIRCUIT BOARD

SPEED SERECT SWITCH

PITCH CONTROL SWITCH

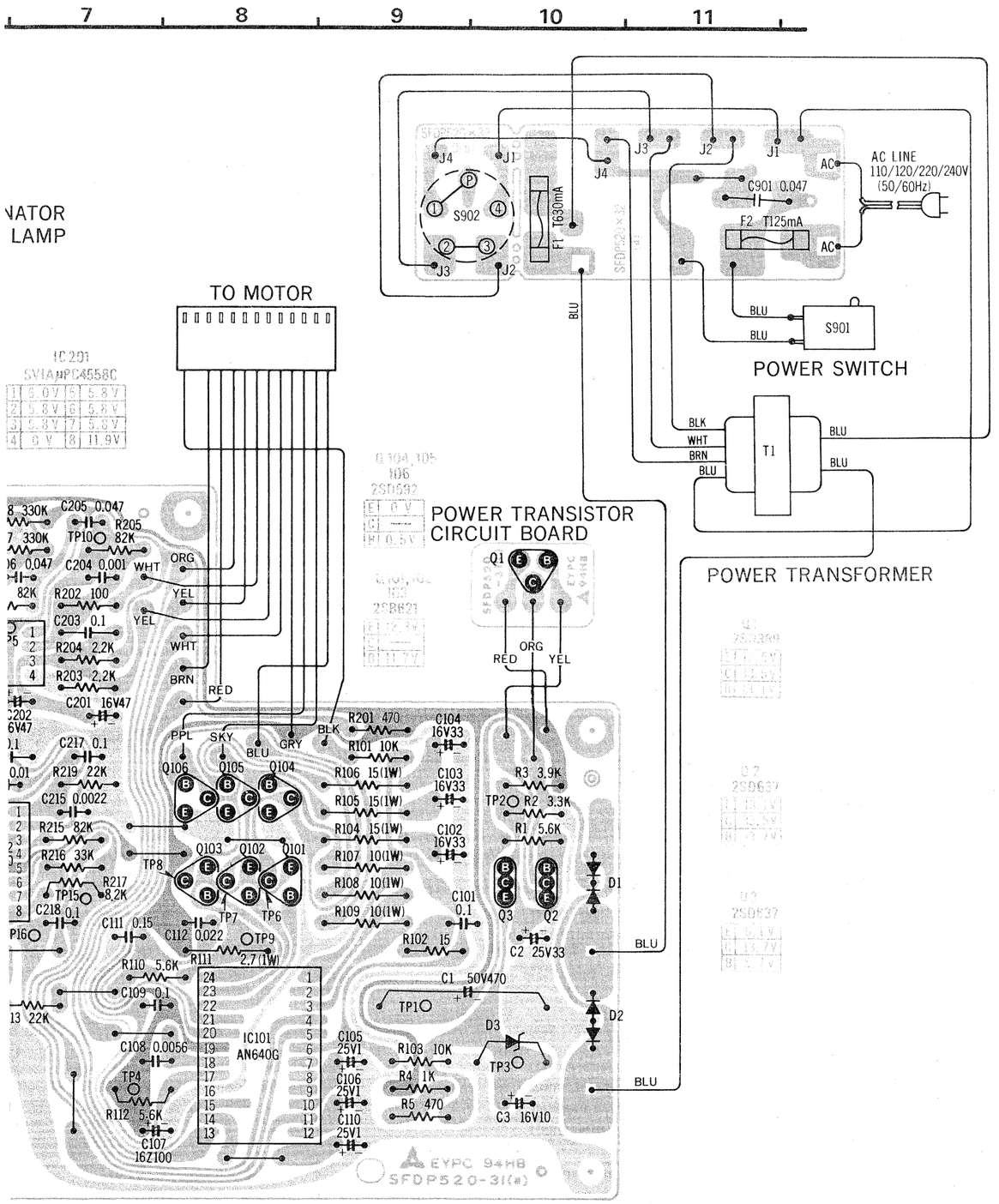
PITCH CONTROL VOLUME

PERIOD ADJUSTMENT VOLUME

SPEED CONTROL VOLUME

DRIVE CIRCUIT BOARD

Ref. No.
INTEGRATED C
IC101 IC201 IC202 IC203
TRANSISTORS
Q1 Q2, 3 Q101, 102, 103 Q104, 105, 106
DIODES
D1 D2 D3 D201 D202
CRYSTAL
X201
TRANSFORME
T1
FUSES
F1 F2
SWITCHES
S1 S2, 3 S5 **S901** [X, XG, 10XG, XGF] **S901** [XAL, XGE, E, 10E] S902
VARIABLE RE
VR201, 202 VR203
RESISTORS
R1 R2 R3 R4 R5 R101 R102 R103 R104, 105, 106 R107, 108, 109



DRIVE CIRCUIT BOARD

■ REPLACEMENT PARTS LIST

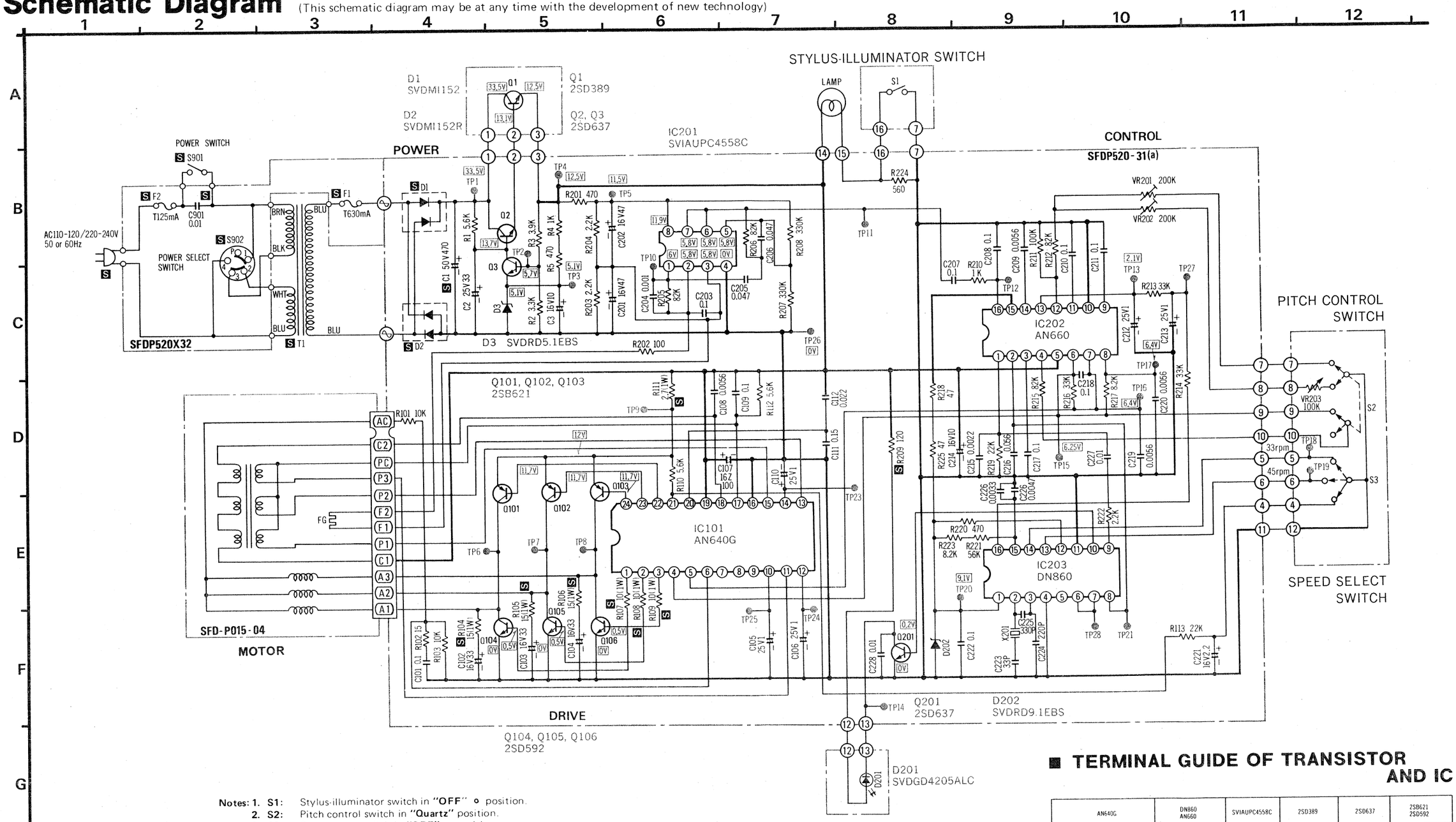
Notes: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2. **S** indicates that only parts specified by the manufactuer be used for safety.
3. SL-5200 (X) →[X] SL-5200 (E) →[E] SL-5200 (XGB) →[XGB]
SL-5200 (XAL) →[XAL] SL-5200 (XG) →[XG] SL-5210 (E) →[10E]
SL-5200 (XGE) →[XGE] SL-5200 (XGF) →[XGF] SL-5210 (XG) →[10XG]

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUITS			
IC101		AN640G	Integrated Circuit
IC201		SVIUPC4558C	Integrated Circuit
IC202		AN660	Integrated Circuit
IC203		DN860	Integrated Circuit
TRANSISTORS			
Q1		2SD389A-Q	Transistor
Q2, 3		2SD637	Transistor
Q101, 102, 103		2SB621-R	Transistor (Use in ranks Q, R or S) } Use pair ranks
Q104, 105, 106		2SD592-R	Transistor (Use in ranks Q, R or S) } Use pair ranks
DIODES			
D1	S	RVD10DC2	Rectifier
D2	S	RVD10DC2R	Rectifier
D3		SVDRD5.1EBS	Diode, 5.1V Zener
D201		SVDGD4205ALC	Light Emitting Diode
D202		SVDRD9.1EBS	Diode, 9.1V Zener
CRYSTAL			
X201		SVQU306115	4.19328MHz Oscillator
TRANSFORMER			
T1	S	SLT48Q28E	Power Transformer
FUSES			
F1	S	XBA2C012TRO	125mA, Fuse
F2	S	XBA2C06TRO	630mA, Fuse
SWITCHES			
S1		SFDSHSW474	Switch, Stylus-Illuminator
S2, 3		SFDSHSW664	Switch, Select
S5		SFDSHSW665	Switch, Muting
S901 [X, XG, 10XG, XGF]	S	SFDSAH764039	Switch, Power
S901 [XAL, XGE, E, 10E]	S	V-1A445	Switch, Power
S902	S	SFDSHXW01317	Switch, Power Source Selector
VARIABLE RESISTORS			
VR201, 202		EVLS6AA00B25	200kΩ, Speed Control
VR203		EVHX8AF15B15	100kΩ, Pitch Control
RESISTORS			
R1		**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R2		**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R3		**ERD25TJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R4		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R5		**ERD25TJ471**	Carbon, 470Ω, 1/4W, ± 5%
R101		**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R102		**ERD25TJ150**	Carbon, 15Ω, 1/4W, ± 5%
R103		**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R104, 105, 106		ERG1ANJ150	Metallic, 15Ω, 1W, ± 5%
R107, 108, 109		ERG1ANJ100	Metallic, 10Ω, 1W, ± 5%

Ref. No.		Part No.	Part Name & Description
R110		**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R111		ERX1ANJ2R7	Metallic, 2.7Ω, 1W, ± 5%
R112		**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R113		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R202		**ERD25TJ101**	Carbon, 100Ω, 1/4W, ± 5%
R201		**ERD25TJ471**	Carbon, 470Ω, 1/4W, ± 5%
R203, 204		**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R205, 206		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R207, 208		**ERD25TJ334**	Carbon, 330kΩ, 1/4W, ± 5%
R209		**ERD25TJ121**	Carbon, 120Ω, 1/4W, ± 5%
R210		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R211		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R212		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R213, 214		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R215		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R216		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R217		**ERD25TJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R218		**ERD25TJ470**	Carbon, 47Ω, 1/4W, ± 5%
R219		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R220		**ERD25TJ471**	Carbon, 470Ω, 1/4W, ± 5%
R221		**ERD25TJ563**	Carbon, 50kΩ, 1/4W, ± 5%
R222		**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R224		**ERD25TJ561**	Carbon, 560Ω, 1/4W, ± 5%
CAPACITORS			
C1		**ECEB1HS471**	Electrolytic, 470μF, 50V
C2		**ECEA1VS330**	Electrolytic, 33μF, 35V
C3		**ECEA1HS100**	Electrolytic, 10μF, 50V
C101		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C102, 103, 104		**ECEA1CS330**	Electrolytic, 33μF, 16V
C105, 106		ECSF25E1ZEN	Tontalum, 1μF, 25V
C107		**ECEA16Z101**	Electrolytic, 100μF, 16V
C108		ECQM1H562KZ	Polyester, 0.0056μF, 50V, ±10%
C109		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C110		ECSF25E1ZEN	Tantalum, 1μF, 25V
C111		ECQM1H154KZ	Polyester, 0.15μF, 50V, ±10%
C112		ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C201, 202		**ECEA1ES470**	Electrolytic, 47μF, 25V
C203		ECKD1E104ZFZ	Ceramic, 0.1μF, 35V, ±10%
C204		ECQM1H102KZ	Polyester, 0.001μF, 50V, ±10%
C205, 206		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C207		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C208		ECKD1E104ZFZ	Polyester, 0.1μF, 35V,
C209		ECQM1H562KZ	Polyester, 0.0056 F, 50V, ±10%
C210, 211		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C212, 213		ECSF25E1ZEN	Tantalum, 1μF, 25V
C214		**ECEA1HS100**	Electrolytic, 10μF, 50V
C215		ECQM1H222KZ	Polyester, 0.0022μF, 50V, ±10%
C216		ECQM1H563JZ	Polyester, 0.056μF, 50V, ± 5%
C217, 218		ECQM1H104KZ	Polyester, 0.1μF, 40V, ±10%
C219, 220		ECQM1H562KZ	Polyester, 0.0056μF, 50V, ±10%
C221		**ECEA2AS2R2**	Electrolytic, 2.2μF, 100V
C222		ECKD1E104ZFZ	Ceramic, 0.1μF, 35V,
C223		ECCD1H330K	Ceramic, 33pF, 50V, ±10%
C224		ECCD1H221K	Ceramic, 220pF, 50V, ±10%
C225		ECCD1H331K	Ceramic, 330pF, 50V, ±10%
C226		ECQS1472K	Polystyrene, 0.0047μF, 125V, ±20%
		ECQM1H332KZ	Ceramic, 0.0033μF, 50V, ±20%
C227, 228		ECQM1H103KZ	Ceramic, 0.01μF, 50V, ±20%
C901 [X, XG, 10XG, XGF]		ECQE2A103MZ	Polyester, 0.01μF, 250V, ±20%
C901 [XAL, XGE, E, 10E]		ECKDHS103SE2	Polyester, 0.01μF, 250V, ±20%

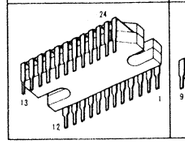
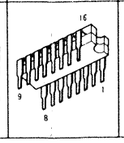
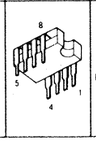
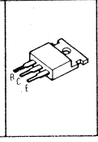
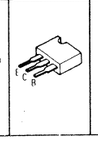
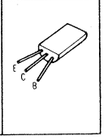
Schematic Diagram

(This schematic diagram may be at any time with the development of new technology)



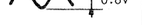
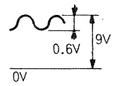
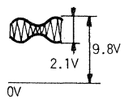
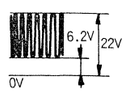
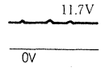
Notes: 1. **S1:** Stylus-illuminator switch in **"OFF"** ○ position.
2. **S2:** Pitch control switch in **"Quartz"** position.
3. **S3:** Speed select switch in **"OFF"** • position.
4. **S901:** Power switch in **"OFF"** position.
5. The voltage values are those measured on DC voltmeter at 33-1/3 r.p.m. For the voltage and waveform at each IC pin, refer to page 17.
6. To represent transistors, **Q** is used instead of **TR.** (Ex. TR1 → Q1)
7. **S indicates that only parts specified by the manufactuer be used for safety.**

■ TERMINAL GUIDE OF TRANSISTOR AND IC

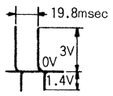
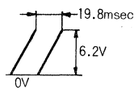
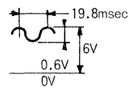
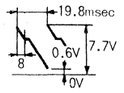
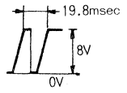
AN640G	DN860 AN660	SVIAUPC4558C	2SD389	2SD637	2SB621 2SD592
					

■ REFERENCE VOLTAGE AND WAVEFORM AT EACH IC PIN AND TEST POINT

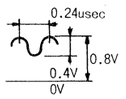
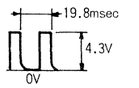
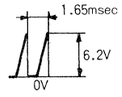
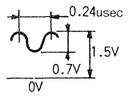
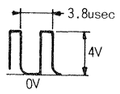
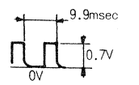
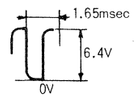
IC101 (AN640G)

① ② ③		⑩ ⑫ ⑭		⑰	8.3V	㉑	
⑥		⑪ ⑬ ⑮		⑱		㉒ ㉓ ㉔	

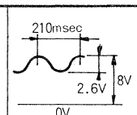
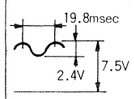
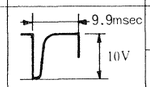
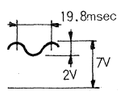
IC202 (AN660)

①		⑦	6.4V	⑪		⑬	2.1V	⑯	
②		⑧	6.4V	⑫	2.1V	⑭			

IC203 (DN860)

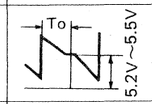
①	9.1V	③		⑨		⑬	33 r.p.m	2.8V	⑮ 
							45 r.p.m	0 V	
②		⑥ ⑦		⑩		⑭	33 r.p.m	0 V	⑯ 
							45 r.p.m	2.8V	

TESTPOINT (TP)

TP 1	33.5V	TP 6		TP10		TP12	IC202 ⑯	TP17	IC203 ⑧
TP 2	5.7V	7				TP13	2.1V	TP18	IC203 ⑭
TP 3	5.1V	8				TP14		TP19	IC203 ⑬
TP 4	12.5V							TP20	9.1V
TP 5	11.9V	TP 9	12V	TP11		TP15	6.25V	TP21	IC203 ⑧
						TP16	IC202 ⑦		

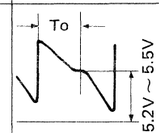
Adjustment Points of Electrical System

NOTE: Make the following adjustments after replacing parts such as IC's, transistors, diodes, etc.

No.	Adjustment	Connection for measurement	Part adjusted	Adjusting procedure
1.	(TRACKING)	(Oscilloscope) ⊕—TP26 ⊖—Earth	VR201	 Set power switch ON to rotate the turntable. Then adjust VR201 so that To is 6 ~ 7 msec. at 33 r.p.m.
2.	(SPEED)		VR202	Set speed volume (VR203) to the central point, and then adjust VR202 so that turntable is stationary in strobescope light. Note) At that time, quartz should be OFF.

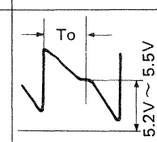
Justierungspunkte des elektrischen Systems

BEMERKUNG: Nehmen Sie die folgenden Justierungen nach erfolgtem Austausch von Teilen, wie IC's, Transistoren, Dioden, usw, vor.

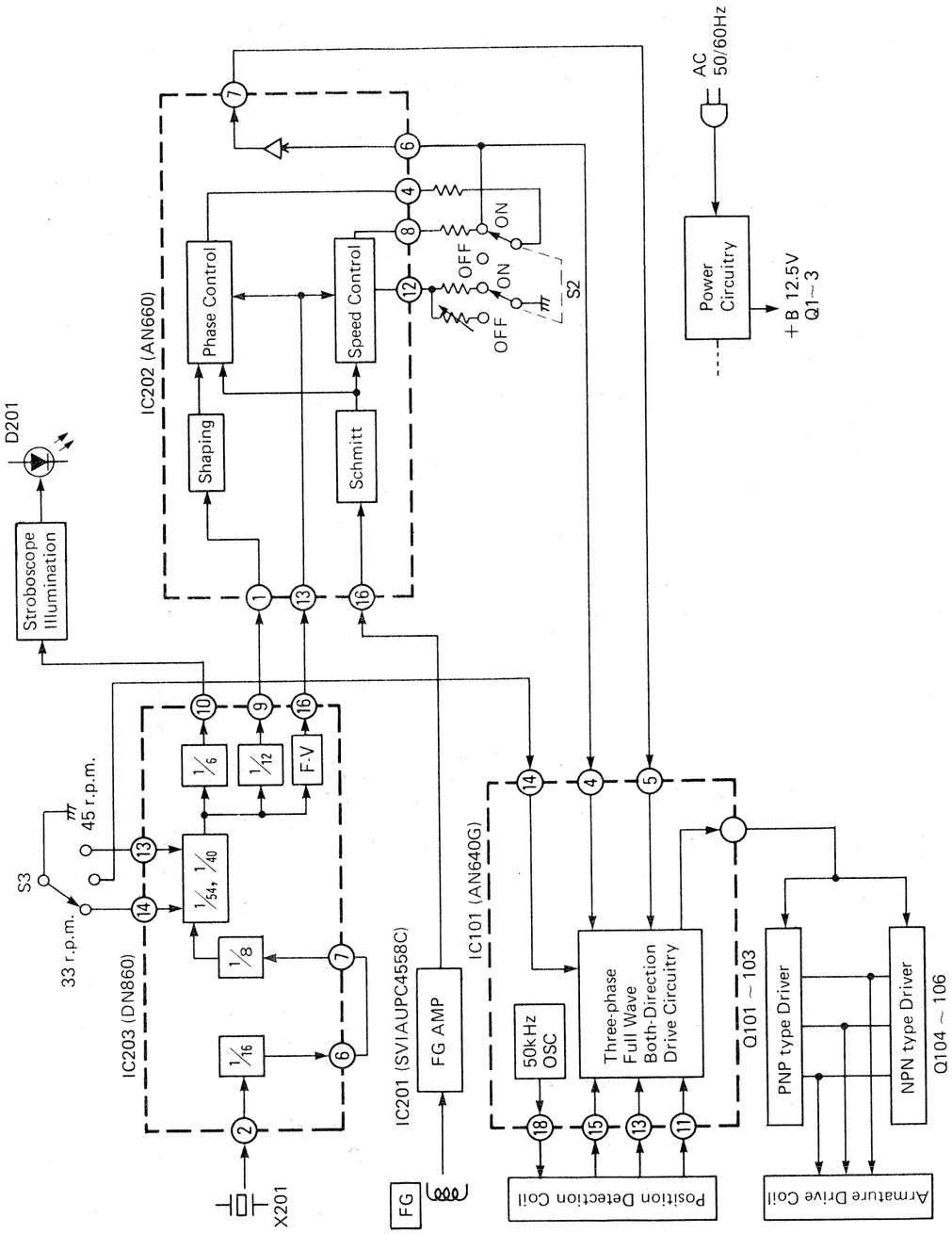
Nr.	Justierung	Anschluß für Messung	Teil zu justieren	Justierungsverfahren
1.	Abgleich (TRACKING)	(Oszillograph) ⊕—TP26 ⊖—Erdung	VR201	 Hauptschalter auf ON stellen, um Plattenteller zu drehen. Dann VR201 so justieren, daß To unnerhalb von 6-7 msek. bei 33 U/m bleibt. Anm.: dabei soll Quarz ON sein.
2.	Geschwin-digkeit (SPEED)		VR202	Geschwindigkeitsregler (VR203) auf die Mitte stellen, dann VR202 so einstellen, daß Stroboskop am Plattenteller stehenbleibt. Anm.: Dabei soll Quarz Off sein.

Points de réglage du systéme électrique.

NOTA: Réaliser les mises au point suivantes aprés le remplacement de certains éléments tels que circuits intégrés, transistors, diodes, etc.

No.	Réglage	Branchement pour la mesure	Elément à régler	Procédé de réglage
1.	Réglage exact (TRACKING)	(Oscilloscope) ⊕—TP26 ⊖—Terre	VR201	 Placer le commutateur d'alimentation sur ON (marche) pour faire tourner le plateau du tourne-disque. Puis régler VR201 de telle sorte que To soit de 6 à 7msec.
2.	Vitesse (SPEED)		VR202	Placer le volume de la vitesse (VR203) en position centrale et régler VR202 de telle sorte que le plateau du tourne-disque apparaîsse stationnaire dans la faisceau du stroboscope. Note: A cette étape, le quartz doit être sur OFF (arrêt)

■ BLOCK DIAGRAM



■ TROUBLE SHOOTING

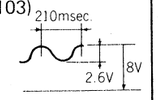
(A) Automatic start, Manual start
Neither rotates

→ Power circuitry check
TP1 · 33.5V
TP3 · 5.1V
TP4 · 12.5V
TP5 · 11.5V

BAD → Q1, Q2, Q3
D1, D2, D3

OK ↓

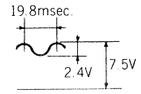
Drive circuitry check
1) IC101 wave form
2) Q101 (Q102, Q103)
3) TP6 (TP7, TP8)



BAD → IC101
Q101, Q102, Q103,
Q104, Q105, Q106

(B) Runaway operation

→ FG circuitry check
TP10



BAD → IC201

OK ↓

Control circuitry check
1) IC202 wave form or voltage

BAD → IC202

(C) 33-45 rpm
Changeover malfunction

→ Speed-set circuitry check IC203 ⑬
⑭ pin voltage
⑬ (TP19) — 33 rpm · 2.8V / 45 rpm · 0V
⑭ (TP18) — 33 rpm · 0V / 45 rpm · 2.8V

BAD → IC203
S3

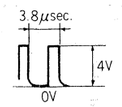
(D) Pitch control malfunction
Stroboscope synchronization
malfunction

→ Quartz-crystal oscillation power check
TP20 9.1V (8.6~9.6V)

BAD → D202

OK ↓

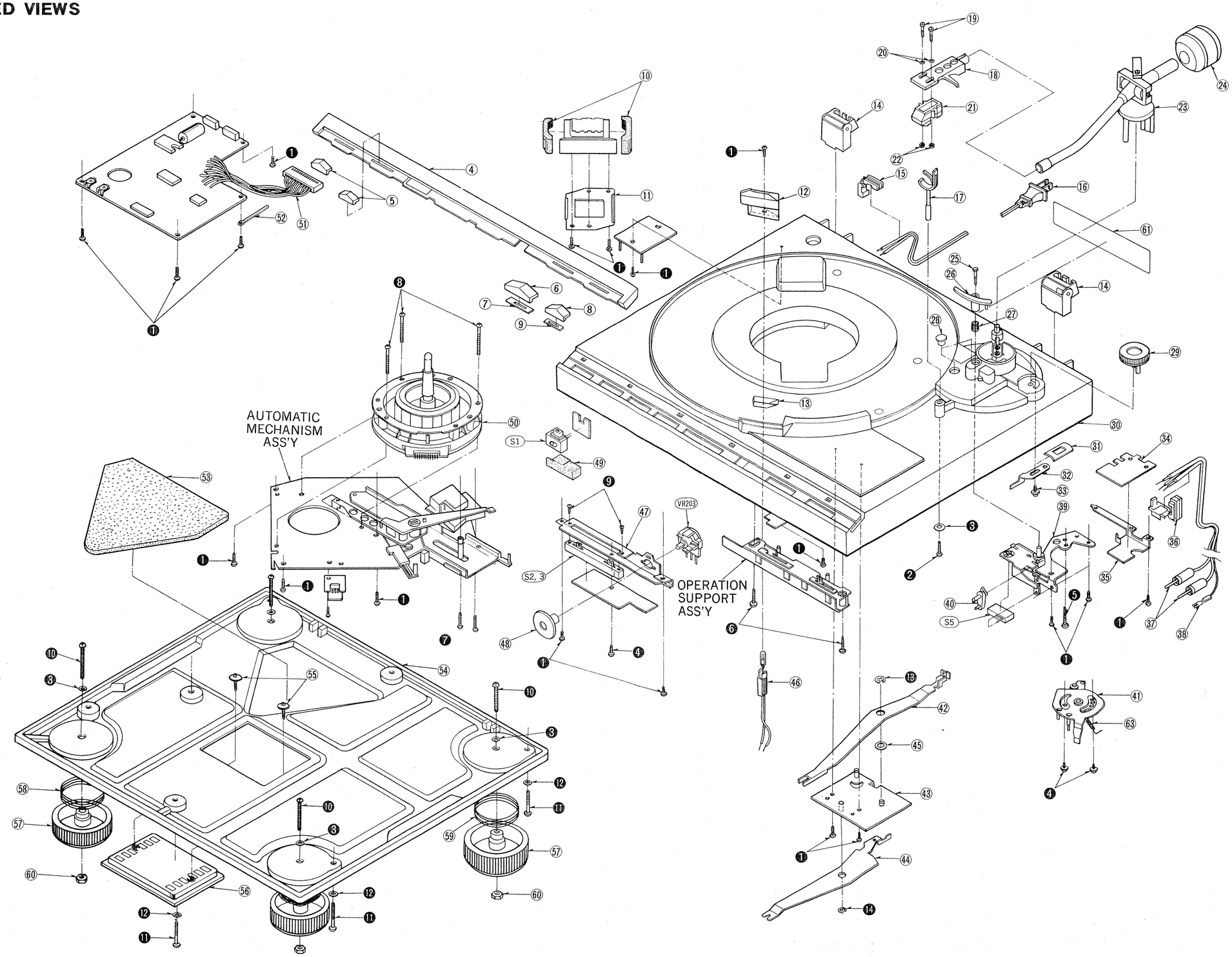
Quartz-crystal oscillation circuitry check
1) TP28



2) IC203 wave form or voltage

BAD → X201
IC203

■ EXPLODED VIEWS



■ REPLACEMENT PARTS LIST

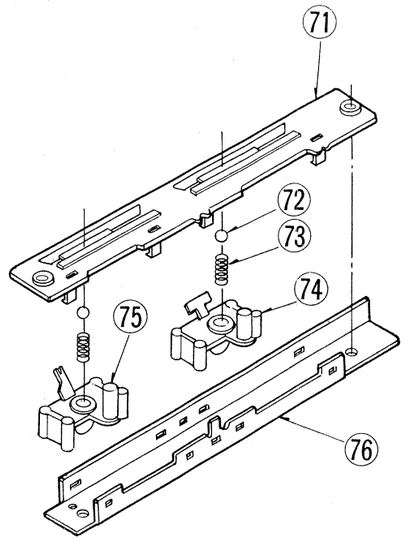
Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. **S** indicates that only parts specified by the manufactuer be used for safety.
3. SL-5200(X) → [X] SL-5200 (E) → [E] SL-5200 (XGB) [XGB]
SL-5200 (XAL) → [XAL] SL-5200 (XG) → [XG] SL-5210 (E) → [10E]
SL-5200 (XGE) → [XGE] SL-5200 (XGF) → [XGF] SL-5210 (XG) → [10XG]

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1		SFAD520-31E	Dust Cover
2		SFTG320-01	Turntable Mat
3		SFTE520-31A	Turntable
4 [X, XAL, XGE, E, XG, XGF, XGB]		SFKK520-31	Panel, Front
4 [10E, 10XG]		SFKK521P31	Panel, Front
5		SFKT520-33	Knob, Select
6		SFKT520-31	Knob, Operation
7		SFXW212-02	Washer, Operation Knob
8		SFKT520-32	Knob, Cueing
9		SFXW212-01	Washer, Cueing Knob
10		SFGC520-31	Cushion, Power Transformer
11		SFUP520-31	Plate, Power Transformer
12		SFUM520-31	Cover, Neon
13		SFUP520-33	Reflector Plate
14		SFAT301-01A	Hinge
15 [except XAL]		SFUM190-11	Bushing, AC Cord
15 [XAL]		SFUM190-12	Bushing, AC Cord
16 [X, E, 10E, XGF, XG, 10XGE, XGB]	S	RJA23ZC-K	AC Cord
16 [XAL]	S	QFC1208M	AC Cord
16 [XGE]	S	RJA45ZC-K	AC Cord
17		SFKU212-01E	Arm Rest
18		SFPCC31001K	Head Shell
19 [except XGE, XGF]		SFCZ8801	Screw, Cartridge
20 [except XGE, XGF]		SFPEW9601	Washer, Cartridge
21 [except XGE, XGF]		EPC206CK	Cartridge
22 [except XGE, XGF]		SFPEN3302	Nut, Cartridge
23		SFPAM51001K	Tone Arm
24		SFPWG51001K	Balance Weight
25		SFXG829-1	Screw, Tone Arm Lift Adjustment
26		SFPRT51001K	Lift Ass'y
27		SFQA829-03	Spring, Lift Ass'y
28 [X, XAL, XGE, E, XG, XGF, XGB]		SFGK132-01	Cap, Rubber (Silver)
28 [10E, 10XG]		SFGK133S01	Cap, Rubber (Black)
29		SFPJK19004	Knob, Anti-skate Force Control
30 [X, XAL, XGE, E, XG, XGF, XGB]		SFAC520-31	Cabinet (Silver)
30 [10E, 10XG]		SFAC521P31	Cabinet (Black)
31		SFQP212-02	Supporter, Anti-skate Force Control
32		SFUP212-02	Plate, Anti-skate Force Control
33		SFXG212-04	Screw, Anti-skate Force Control
34		SFDP520-35	P.C.B., Phono Cord
35		SFUP683R04	Plate, Shield
36		SFUM212-08	Clamper, Phono Cord
37		SFDH212-01	Phono Cord
38		SFEL028-01E	Ground Wire
39		SFUP520-32A	Bracket, Lift Ass'y
40		SFUM212-01	Cam, Cueing
41		SFUP520-38A	Tone Arm Fixing Plate Ass'y
42		SFUP212-04	Lever, Cueing
43		SFUK230-02E	Plate, Cueing
44		SFUP222-01	Lever, Stop
45		SFXW190-22	Washer, Cueing Lever
46		SFDN520-31E	Lamp Ass'y

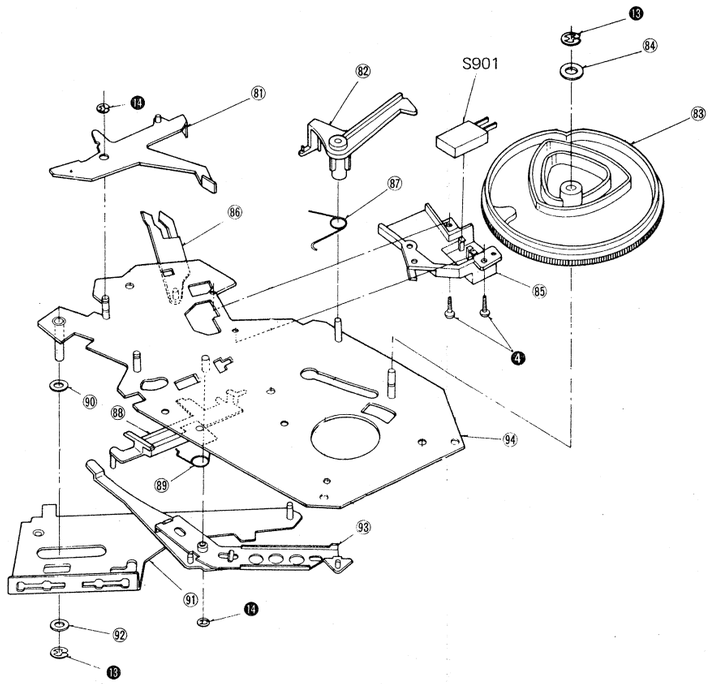
Ref. No.		Part No.	Part Name & Description
47		SFUP520-36	Plate, Selector Switch
48		SFKT212-02	Knob, Pitch Control
49		SFGZ520-31	Rubber, Switch
50		SFMZ520-31Z	Stater Frame Ass'y
51		SFDJ520-31E	Connector, Motor P.C.B.
52		SXE513	Clamper, Cord
53		SFGZ320-01	Rubber, Bottom Board
54		SFAU320-01	Bottom Board
55		SFXG132-02	Screw, Cover
56		SFUM320-02	Cover, Bottom Board
57		SFGA520-31	Audio Insulator
58		SFQC200-02	Spring, (Front) Audio Insulator
59		SFQC320-01	Spring, (Rear) Audio Insulator
60		XNG3HS	Nut
61 [X, XG, XGF XGB]		SFNN520X31	Name Plate
61 [XAL, XGE]		SFNN520G31	Name Plate
61 [E]		SFNN520S31	Name Plate
61 [10E]		SFNN521S31	Name Plate
61 [10XG]		SFNN521P31	Name Plate
63		SFPSP19004	Spring, Anti-skate Force Control
OPERATION SUPPORT ASS'Y			
71		SFUM212-02	Plate, Operation
72		SFYB5-32	Ball, Slider Ass'y
73		SFQA130-11	Spring, Slider Ass'y
74		SFUP212-20E	Slider Ass'y (B)
75		SFUM212-03E	Slider Ass'y (A)
76		SFUP520-35	Case, Operation Support
AUTOMATIC MECHANISM ASS'Y			
81		SFUM222-16	Lever, Switch
82		SFUM222-11	Supporter, Gear Setting
83		SFUG190-22E	Main Gear Ass'y
84		SFXW890B01	Washer, Main Gear Ass'y
85		SFUM222-14	Cover, Switch
86		SFUM222-15	Plate, Switch
87		SFQS222-11	Spring, Supporter
88		SFUM222-13	Plate, Stop
89		SFQS222-12	Spring, Stop Plate
90		SFXW130-13	Washer, Operating Plate Ass'y
91		SFUB222-11A	Operating Plate Ass'y
92		SFXW623-02	Washer, Operating Plate Ass'y
93		SFUC320-11E	Actuating Plate Ass'y
94		SFUK320-11E	Automatic Mechanism Ass'y
SCREWS and CIRCLIPS			
❶		XTN3+10B	Screw
❷		XTN3+14B	Screw
❸		XWG3	Screw
❹		XTN3+8B	Screw
❺		XTN4+16B	Screw
❻		XTN3+20B	Screw
❼		XTN3+35B	Screw
❽		XTN3+30B	Screw
❾		XSN2+4BN	Screw
❿		XSN3+18S	Screw
⓫		XTN3+20BFZ	Screw
⓬		XWG3FZ	Washer
⓭		**XUC5FT**	Circlip
⓮		**XUC3FT**	Circlip

■ EXPLODED VIEWS

- OPERATION SUPPORT ASS'Y



- AUTOMATIC MECHANISM ASS'Y

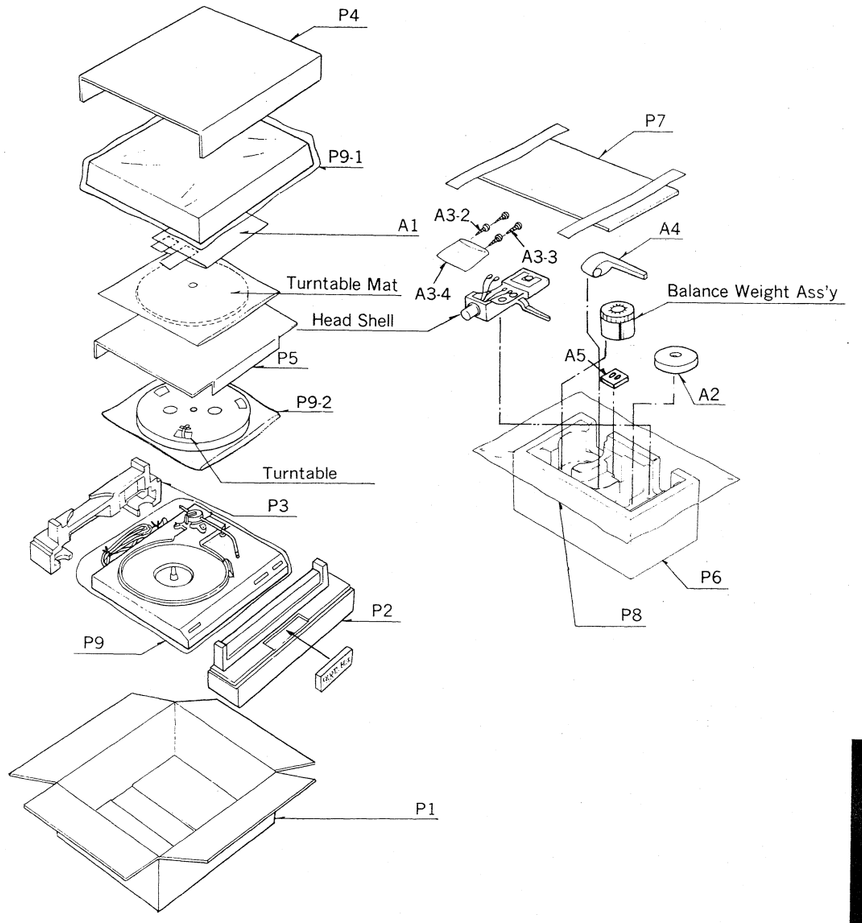


■ REPLACEMENT PARTS LIST

Notes: SL-5200 (X) →[X] SL-5200 (E) →[E] SL-5200 (XGB) →[XGB]
SL-5200 (XAL) →[XAL] SL-5200 (XG) →[XG] SL-5210 (E) →[10E]
SL-5200 (XGE) →[XGE] SL-5200 (XGF) →[XGF] SL-5210 (XG) →[10XG]

Ref. No.		Part No.	Part Name & Description
ACCESSORIES			
A1		SFNU520X31	Instruction Book
A2		SFWE212-01	Adaptor, 45 r.p.m
A3 [XGE, XGF]		SFPEN3302	Nut, Cartridge
A3-1 [XGE, XGF]		SFPEW9601	Washer, Cartridge
A3-2 [XGE, XGF]		SFCZV8801	Screw, Cartridge
A3-3 [XGE, XGF]		SFPEV9801	Screw, Cartridge
A3-4 [XGE, XGF]		SFYF05A06	Polyethylene Bag
A4		SFKO135-01E	Overhang Gauge
A5		SFPZB3501	Shell Weight
PACKINGS			
P1 [X, XAL, XGE, E, XG, XGB]		SFHP520X31	Carton
P1 [10E, 10XG]		SFHP521S31	Carton
P1 [XGF]		SFHP520J31	Carton
P2		SFHH320-01	Pad, Front
P3		SFHH320-02	Pad, Rear
P4		SFHD230-01	Pad, Top
P5		SFHD520-31	Pad, Turntable
P6		SFHH212-03	Parts Box
P7		SFHD212-03	Pad, Top, Parts Box
P8		SFYC22A30	Polyethylene Cover Parts Box
P9		SFYF60X60	Polyethylene Cover, Player Unit
P9-1		SFYH60X60	Polyethylene Cover, Dust Cover
P9-2		SFYH40X45	Polyethylene Cover, Turntable
P9-3		SPP189	Polyethylene Bag, Cord

■ PACKINGS



— NOTE —

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